

STREETSVILLE

**water pollution
control plant**

1
9
6
7

Copyright Provisions and Restrictions on Copying:

This Ontario Ministry of the Environment work is protected by Crown copyright (unless otherwise indicated), which is held by the Queen's Printer for Ontario. It may be reproduced for non-commercial purposes if credit is given and Crown copyright is acknowledged.

It may not be reproduced, in all or in part, for any commercial purpose except under a licence from the Queen's Printer for Ontario.

For information on reproducing Government of Ontario works, please contact ServiceOntario Publications at copyright@ontario.ca



ONTARIO WATER RESOURCES COMMISSION

801 BAY STREET, TORONTO 5

OFFICE OF THE GENERAL MANAGER

Members of the Streetsville Local Advisory Committee,
Town of Streetsville.

Gentlemen:

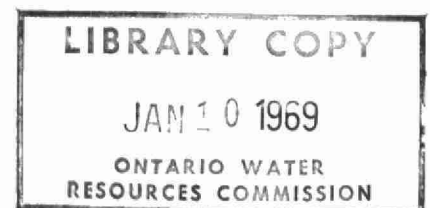
We are happy to present you with the 1967 Operating Summary for the Streetsville Water Pollution Control Plant, OWRC Project No. 2-0005-57.

Your co-operation with our staff throughout the year has been appreciated. Only with such co-operation can the war against water pollution be waged effectively.

Yours very truly,

A handwritten signature in dark ink, appearing to read "D. S. Caverly".

D. S. Caverly,
General Manager.





ONTARIO WATER RESOURCES COMMISSION

801 BAY STREET

TORONTO 5

J. A. VANCE, LL.D.
CHAIRMAN

J. H. H. ROOT, M.P.P.
VICE-CHAIRMAN

D. S. CAVERLY
GENERAL MANAGER

W. S. MACDONNELL
COMMISSION SECRETARY

General Manager,
Ontario Water Resources Commission.

Dear Sir:

I am pleased to submit to you the 1967 Operating Summary for the Streetsville Water Pollution Control Plant, OWRC Project No. 2-0005-57.

The summary reviews progress during the year, outlines operating problems encountered and summarizes in graphs, charts and tables all significant flow and cost data.

Yours very truly,

A handwritten signature in cursive script, reading "D. A. McTavish".

D. A. McTavish, P. Eng.,
Director,
Division of Plant Operations.

FOREWORD

● This operating summary has been prepared in order to acquaint readers with the management of the project during 1967. The efficiency of the plant's operation is reflected in a general review. Significant financial details are recorded, and technical performance is illustrated by graphs and charts.

The summary should answer two salient questions. Are the project's facilities adequate at this time? And can the project meet future requirements?

The Regional Operations Engineer is primarily responsible for the preparation of the report, and will be pleased to answer any questions regarding it.

Most of the material for the graphs and charts was compiled by the statistics section of the Division of Plant Operations, with the final versions of the graphs being drawn by the draughting section of the Division of Sanitary Engineering. Cost data were provided by the Division of Finance.

It will be evident from the report that all of these groups co-operated with substantial success.

C O N T E N T S

Foreword	1
Title Page	3
'67 Review	5
Project Costs	6
Operating Costs	7
Process Data	9
Conclusions	Inside back cover

STREETSVILLE
water pollution control plant

operated for

THE TOWN OF STREETSVILLE

by the

ONTARIO WATER RESOURCES COMMISSION

CHAIRMAN: Dr. James A. Vance

VICE-CHAIRMAN: J. H. H. Root, M. P. P.

COMMISSIONERS

W. D. Conklin, Q. C.	H. E. Brown
D. A. Moodie	L. E. Venchiarutti

GENERAL MANAGER: D. S. Caverly

ASSISTANT GENERAL MANAGERS

L. E. Owers	K. H. Sharpe
F. A. Voegel	A. K. Watt

COMMISSION SECRETARY

W. S. MacDonnell

DIVISION OF PLANT OPERATIONS

DIRECTOR: D. A. McTavish

Assistant Director: C. W. Perry
Regional Supervisor: A. C. Beattie
Operations Engineer: A. Clark

801 Bay Street Toronto 5

'67 REVIEW

A total flow of 242.0 million gallons was treated in 1967. This is an average daily flow of 0.663 mgd, and an increase of 12 percent over 1966. The probability of flow graph shows that the plant was hydraulically overloaded 22 percent of the time.

Pretreatment facilities installed in the canning factories substantially reduced the BOD loading to the plant. The concentration of suspended solids in the raw sewage rose to an average level of 40 percent above design loading for this plant.

In the spring of 1967 the digester was removed from service, emptied, and repaired. It was found that the mixes required extensive repairs. These were completed and the digester returned to service.

Throughout 1967 the process was controlled by one operator and a part-time operator. The plant was under supervision eight hours per day Monday to Friday plus Saturday and Sunday mornings.

There were regular inspections by the operations engineer and his assistant.

The Maintenance Section and Special Services Section assisted in the repairs to the digester and boiler controls. All work involving gas production or handling was carried out under the supervision of the Safety Officer.

PROJECT COSTS

NET CAPITAL COST (Estimated)	\$310,937.98
DEDUCT - Payments from Municipalities	<u>30,000.00</u>
Long Term Debt to OWRC	<u>\$280,937.98</u>
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1967	\$ <u>65,012.33</u>
Debt Retirement	\$ 5,669.00
Reserve	1,366.80
Interest Charged	15,843.04
Net Operating	<u>18,578.39</u>
TOTAL	\$ <u>41,457.23</u>

RESERVE ACCOUNT

Balance at January 1, 1967	\$ 22,416.11
Deposited by Municipality	1,366.80
Interest Earned	<u>1,193.38</u>
	\$ 24,976.29
Less Expenditures	<u>(3,250.00)</u>
Balance at December 31, 1967	\$ <u>21,726.29</u>

MONTHLY OPERATING COSTS

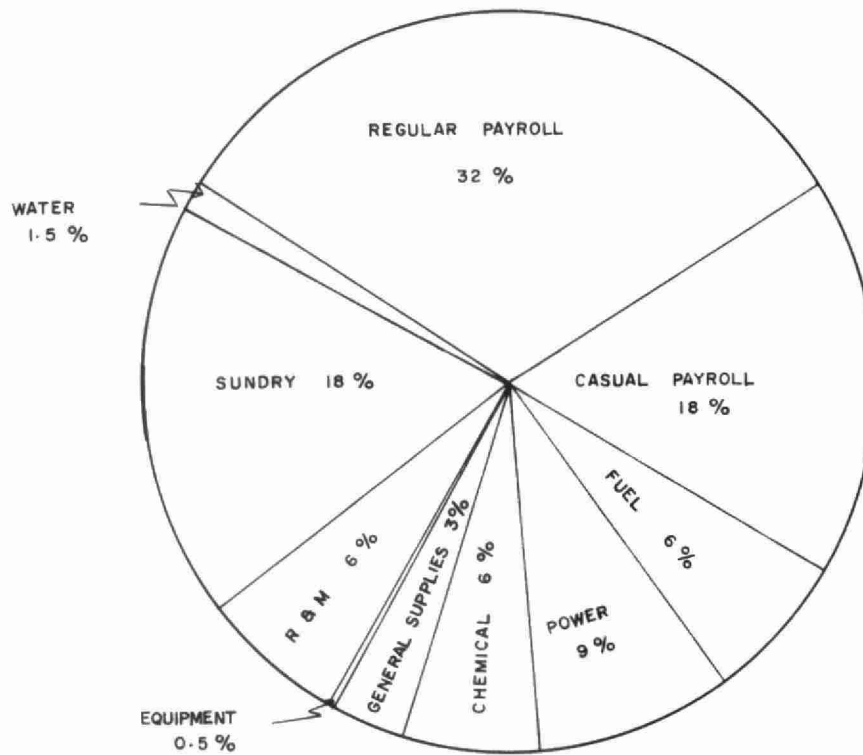
MONTH	TOTAL EXPENDITURE	PAYROLL	CASUAL PAYROLL	FUEL	POWER	CHEMICAL	GENERAL SUPPLIES	EQUIPMENT	REPAIRS & MAINTENANCE	* SUNDRY	WATER
JAN	940.56	411.01	188.43	81.56	134.58		47.30		8.82	50.50	18.36
FEB	1178.86	483.24	208.38		122.53		7.40			342.78	14.53
MARCH	4028.10	747.81	330.50	152.92	117.14		90.71		49.75	2529.42	9.85
APRIL	1513.04	475.38	224.23	259.65	130.00		61.51		218.64	127.30	16.33
MAY	(1527.48)	470.17	231.46		125.44	277.90	83.27		58.50	(2789.20)	14.98
JUNE	2439.59	460.72	302.55	212.32	135.90	5.51	13.78		407.00	880.65	21.15
JULY	1641.47	416.74	425.42	148.01	128.29	278.19	70.99		9.76	136.01	28.06
AUG	1256.03	468.04	295.18		134.38		33.95		122.00	171.52	30.96
SEPT	1665.57	620.57	571.99	80.16	138.08		81.98			133.80	38.99
OCT	1965.47	416.74	219.65	169.48	136.55	328.00	59.13		199.27	401.11	35.54
NOV	1743.46	453.39	185.04		137.22	178.57	20.59		53.63	689.46	25.56
DEC	1733.72	456.34	138.57	76.00	140.27	62.96	23.48	70.30	33.50	715.74	16.56
TOTAL	18578.39	5880.15	3321.40	1180.10	1580.38	1131.13	594.09	70.30	1160.87	3389.09	270.88

* SUNDRY INCLUDES SLUDGE HAULING COSTS WHICH WERE \$4,748.20
BRACKETS INDICATE CREDIT

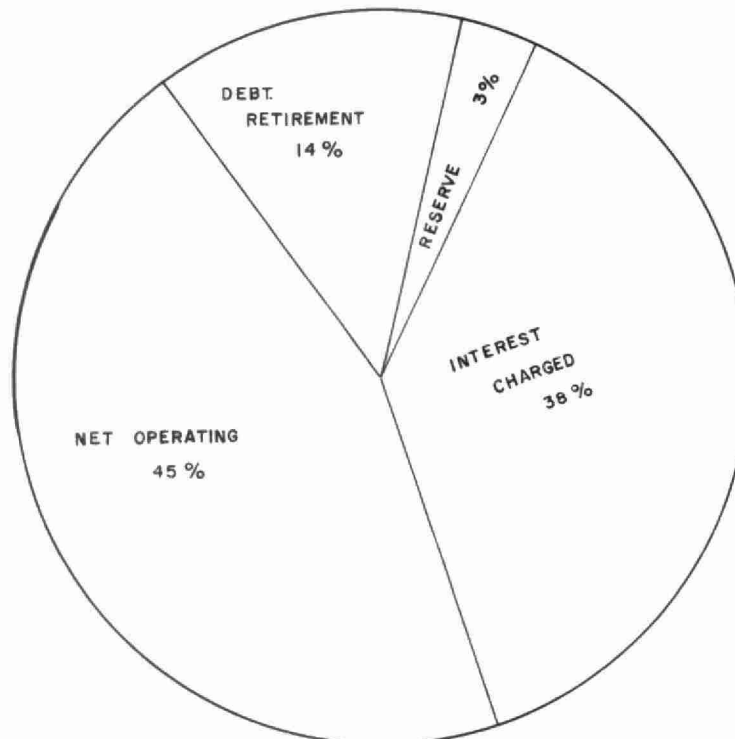
YEARLY OPERATING COSTS

YEAR	M. G. TREATED	TOTAL COST	COST PER MILLION GALLONS	COST PER LB OF BOD REMOVED
1962	148.7	\$11416.75	\$ 77.30	2 CENTS
1963	140.6	14297.80	102.00	2 CENTS
1964	172.3	14024.94	81.39	3 CENTS
1965	200.1	14565.95	72.79	2 CENTS
1966	199.5	16479.72	82.62	2 CENTS
1967	242.0	18578.39	76.77	3 CENTS

1967 OPERATING COST



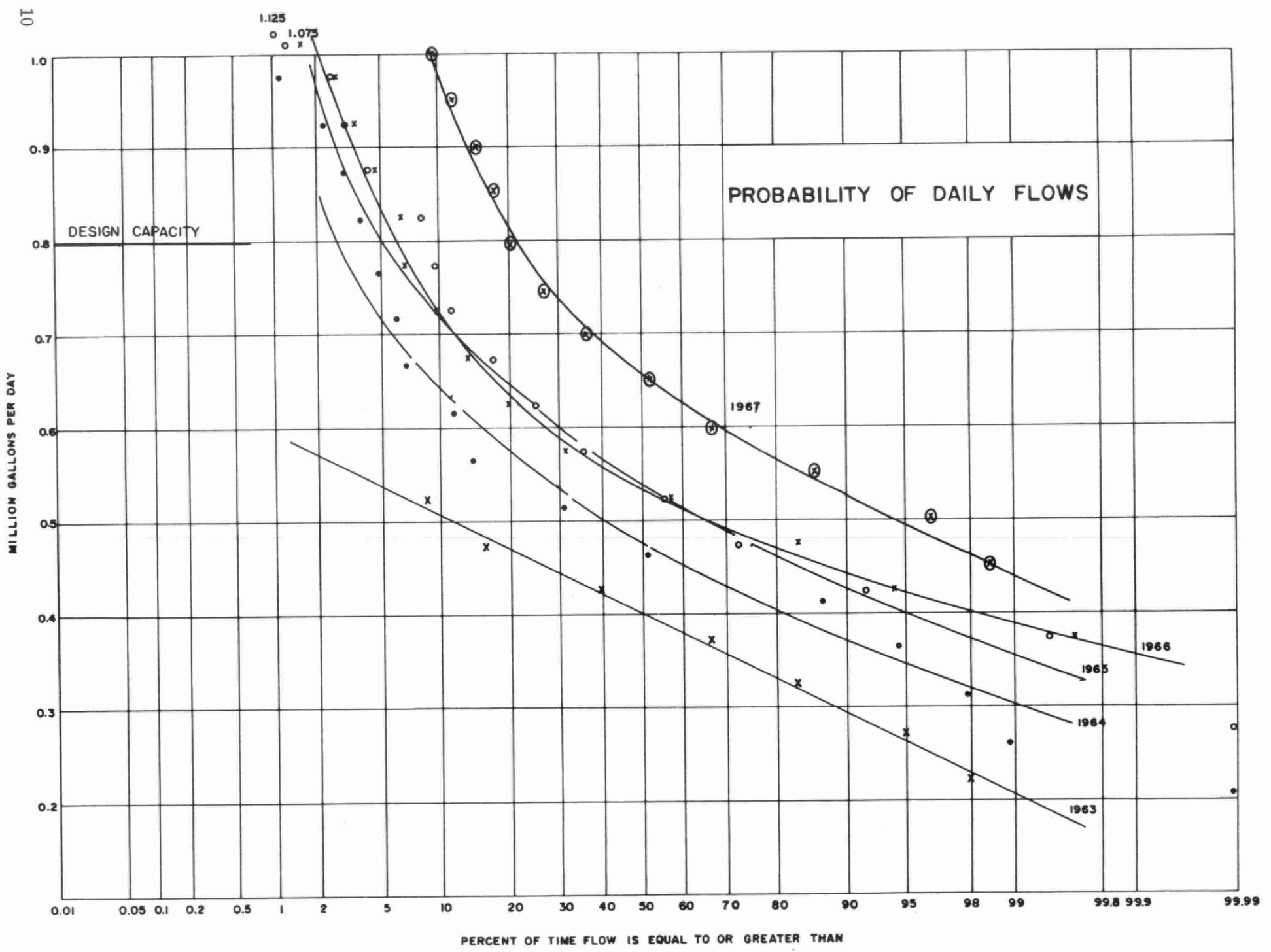
TOTAL ANNUAL COST

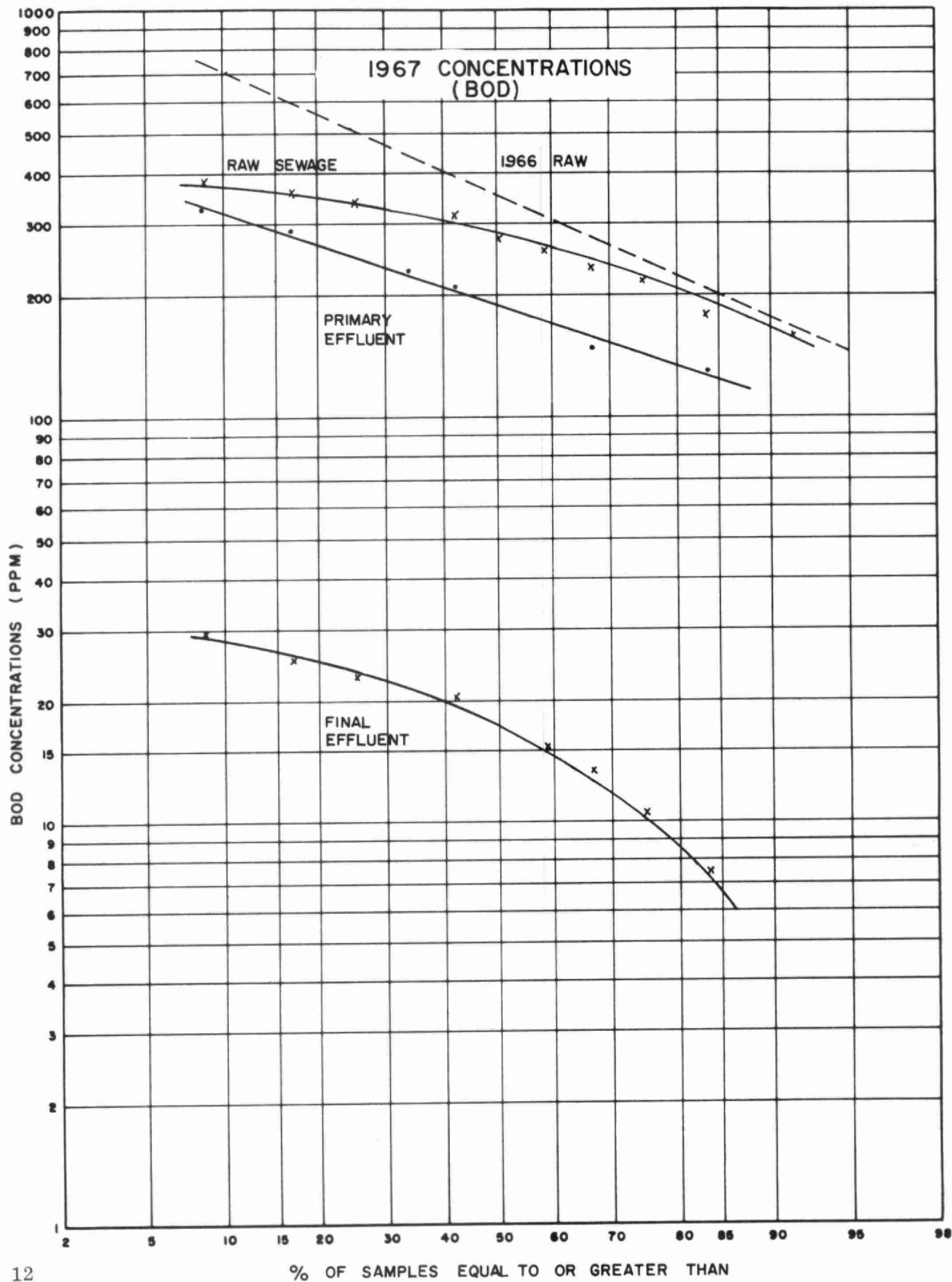


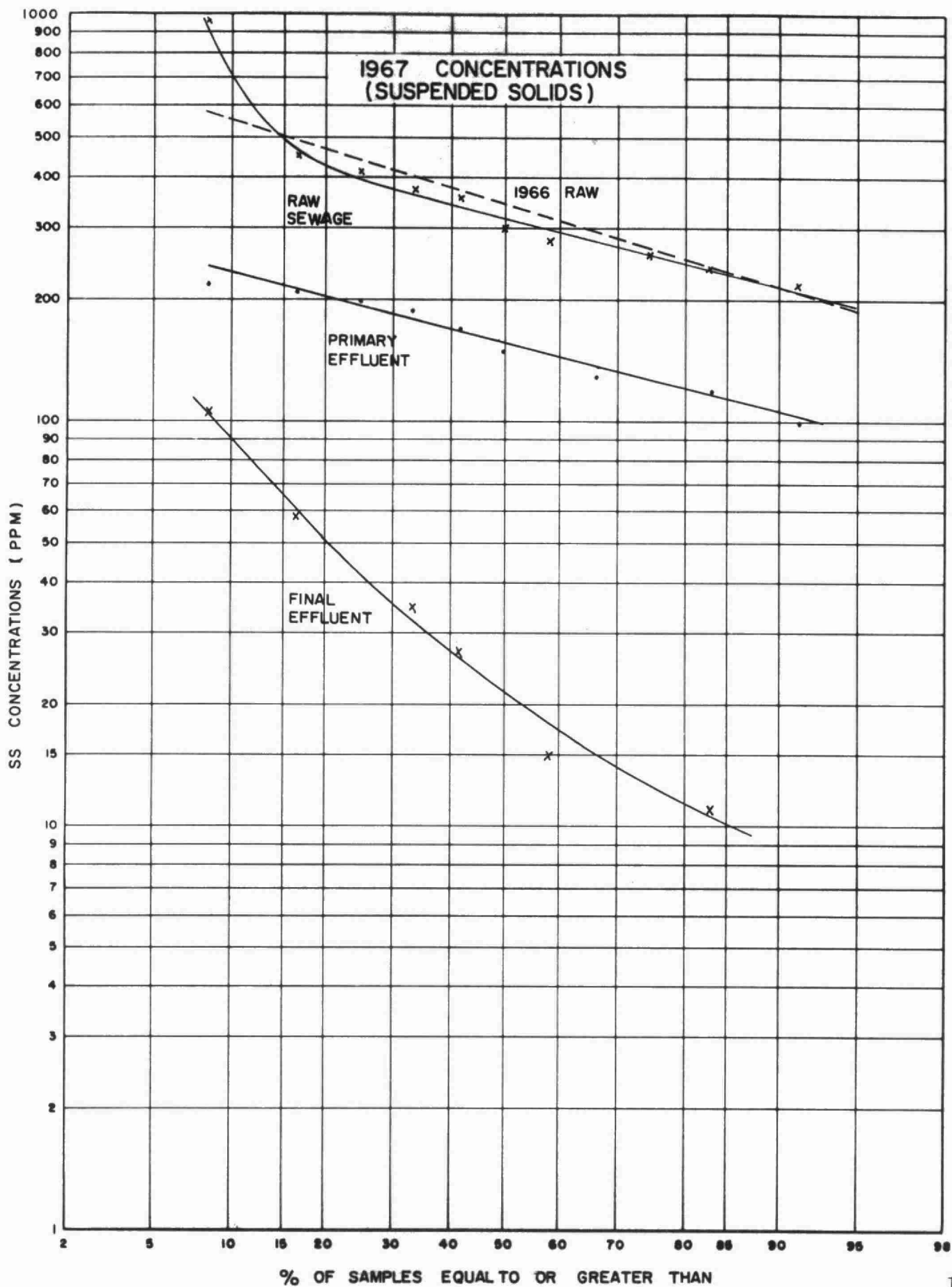
Process Data

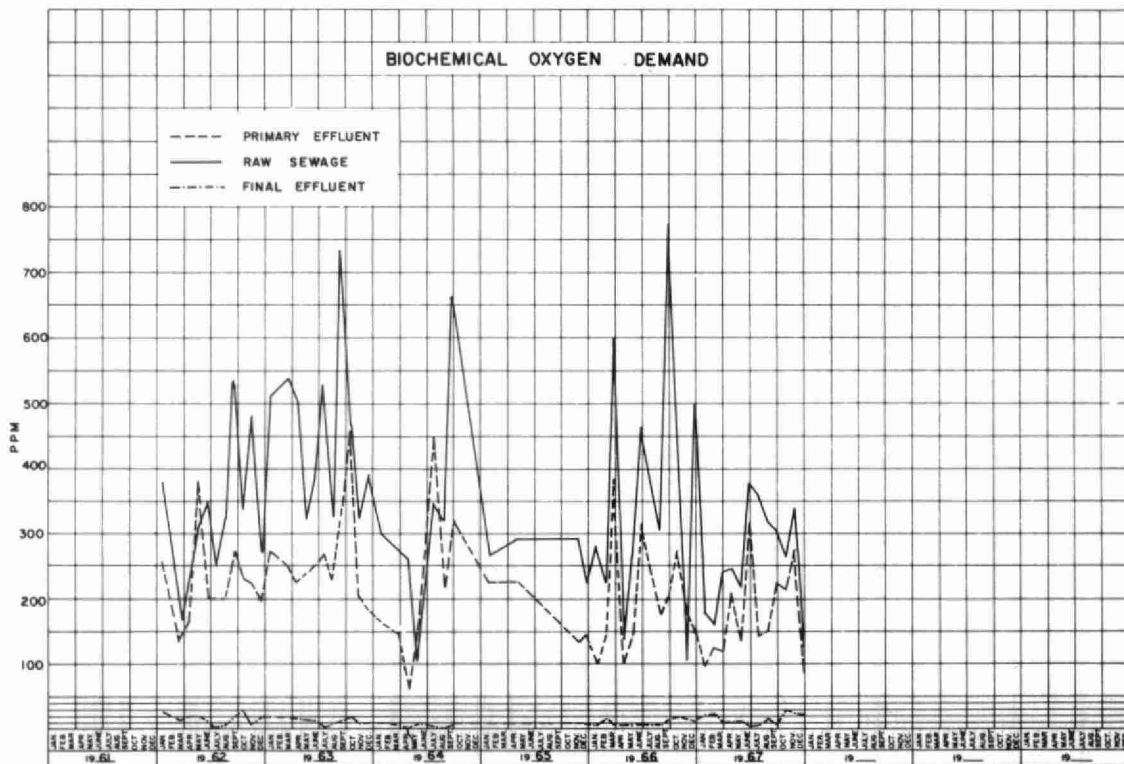
During 1967, a total of 242.0 million gallons of raw sewage was treated. This is a substantial increase over 1966 (12%) and represents a daily flow of 0.663 million gallons or 83 percent of the hydraulic capacity of the plant. The maximum twenty-four hour flow treated during 1967 occurred during the week ending December 23 when a flow of 1.68 million gallons was recorded. The highest monthly average flows occurred in April.

The plant was hydraulically overloaded 22 percent of the time, including all of April.

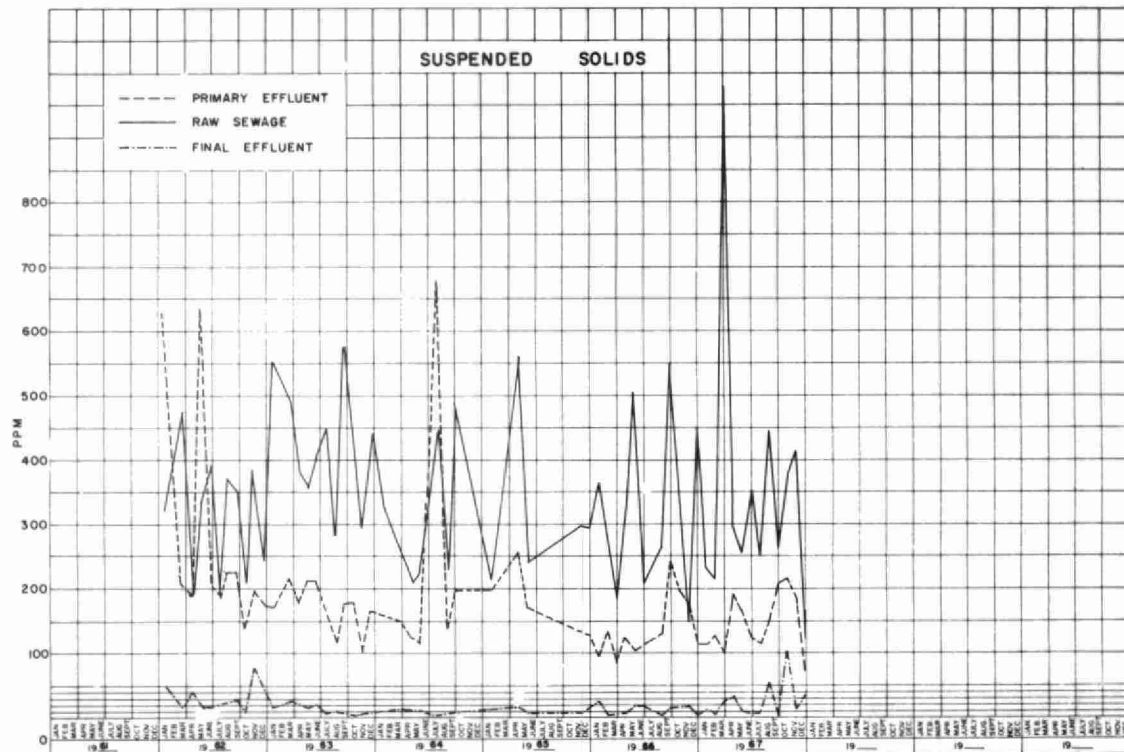








MONTHLY VARIATIONS



GRIT, B.O.D AND S.S. REMOVAL

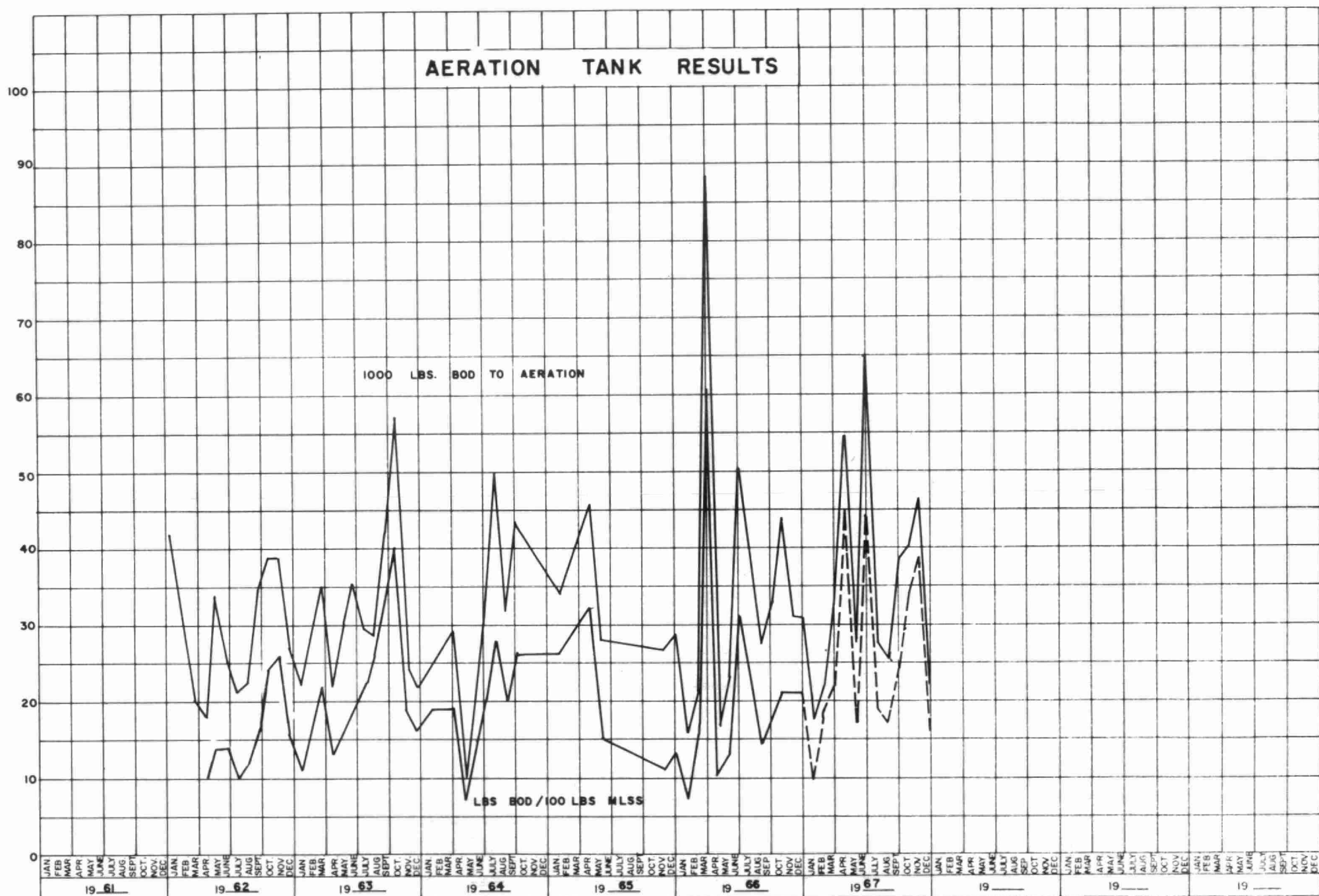
MONTH	B. O. D.				S. S.				GRIT REMOVAL CU. FT.
	INFLUENT PPM.	EFFLUENT PPM.	% REDUCTION	TONS REMOVED	INFLUENT PPM.	EFFLUENT PPM.	% REDUCTION	TONS REMOVED	
JAN.	178	21	88.2	14.19	232	14	94.0	19.71	17
FEB.	160	24	85.0	12.09	216	7	96.8	18.58	10
MAR.	240	11	95.4	31.14	976	25	97.4	129.34	19
APR.	243	17	93.0	29.56	298	34	88.6	34.54	20
MAY	218	12	94.5	21.13	257	11	95.7	25.23	12
JUNE	380	5.8	98.5	39.43	254	9	97.4	36.35	28
JULY	360	5.1	98.6	34.82	250	8	96.8	23.74	26
AUG.	320	14	95.6	25.81	444	56	87.4	32.72	8
SEPT.	305	5	98.4	25.48	262	6	97.7	21.75	11
OCT.	265	29	89.1	22.02	378	104	72.5	25.57	13
NOV.	340	22	93.5	26.63	414	13	96.8	33.58	13
DEC.	125	21	83.2	11.61	126	34	73.0	10.27	25
TOTAL	-	-	-	293.91	-	-	-	411.38	201
AVG.	261	15	92.8	24.49	351	37	91.2	34.28	17

COMMENTS

In 1967, the average BOD of the raw sewage decreased to 261 ppm from 362 ppm in 1966. This is due primarily to the installation of pretreatment facilities at the canning industries.

The average raw sewage suspended solids concentration rose to 251 ppm in 1967 from 328 ppm in 1966. This, when considered with the flow pattern, indicates that a considerable amount of storm and run-off water entered the system. The plant is now operating above its design organic loading.

The organic loading combined with the flow increase resulted in a decrease in overall treatment efficiency from approximately 97% in 1966 to 92% removal of BOD and suspended solids in 1967.



AERATION SECTION

MONTH	PRIM. EFFL B.O.D. PPM.	ML.SS. PPM.	LBS. BOD. PER 100 LBS. M. L. S. S.	CUBIC FEET AIR PER LB. BOD REMOVED
JANUARY	97	2585	9	3149
FEBRUARY	124	1638	19	2176
MARCH	120	1884	22	1453
APRIL	210	1610	45	827
MAY	136	2060	17	1629
JUNE	317	1957	45	614
JULY	140	1840	19	1609
AUGUST	150	2083	15	1468
SEPTEMBER	225	2070	24	1098
OCTOBER	215	1495	34	1215
NOVEMBER	275	1544	39	970
DECEMBER	96	1678	16	2529
TOTAL	-	-	-	-
AVERAGE	175	1870	25	1561

COMMENTS

Air is supplied by fine bubble diffusion. The amount is constant and there is ample reserve as shown by the cubic feet of air per pound of BOD removed. The only time the facilities were taxed was during the high flows of spring and late fall.

DIGESTER OPERATION

Month	Gallons to Digesters	Gallons	
		To Truck	From Beds
January	279000	56576	
February	*		
March	137250 *		
April	19125 *		18870
May	27300 *	14489	17522
June	70500 *	674	9435
July	77925	-	1348
August	97500	15686	49873
September	101325	56155	5392
October	106425	56745	5392
November	95475	56106	4044
December	84450	86549	-
Total	-	342980	111876
Average	-	42873	

* Digester down raw sludge to truck

COMMENTS

During the first months of 1967 the digester was removed from service, emptied, and repaired. Raw sludge was removed by tank truck during this period.

The amount of sludge increased in 1967 due to the high suspended solids concentration of the raw sewage. This in turn resulted in increased sludge haulage costs.

CHLORINATION

MONTH	PLANT FLOW (MG)	POUNDS CHLORINE	DOSAGE RATE (PPM)
JANUARY	18.081	-	-
FEBRUARY	17.780	-	-
MARCH	27.201	* 309	1.86
APRIL	26.164	619	2.37
MAY	20.514	653	3.18
JUNE	21.073	729	3.45
JULY	19.621	656	3.34
AUGUST	16.867	670	3.97
SEPTEMBER	16.990	690	4.06
OCTOBER	18.664	731	3.91
NOVEMBER	16.748	567	3.39
DECEMBER	22.321	583	2.61
TOTAL	242.024	6207	-
AVERAGE	20.169	621	3.21

* Chlorination for 19 days

COMMENTS

The increase in the amount of chlorine used corresponded to the increase in flows . Chlorination was practised whenever the outflow was free of ice.

An average dosage of 3.21 ppm was required to maintain a chlorine residual of 0.5 ppm.

Date Due

NOV 27 1969

JUN - 9 1971

[illegible][illegible]



CONCLUSIONS

The installation of pretreatment facilities at the canning factories substantially reduced the operational problems caused by the high strength of their wastes. However, it will be necessary for the municipality to ensure that these facilities are kept in operation.

The increase in the raw sewage suspended solids during periods of high flows indicates that surface water entered the system in excessive amounts. The plant is rapidly approaching its maximum treatment capacity on a continuous basis.

RECOMMENDATIONS

1. No further increase in loadings should be permitted.
2. A program of storm water exclusion should be investigated particularly in development areas where unstable soil conditions exist.
3. The canning factories should be encouraged to maintain and expand their pretreatment facilities.

